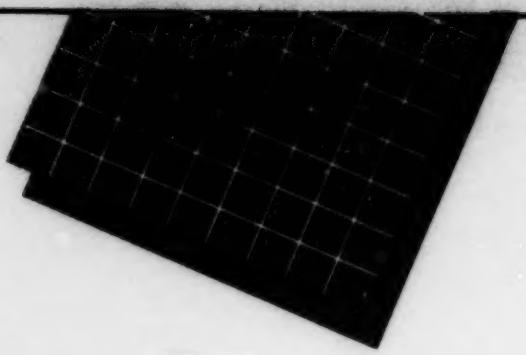

REPORT ON THE SITUATION OF THE ATLANTIC SALMON (Salmo salar) IN NOUVEAU-QUÉBEC IN 1990

by
Louis Roy
and
Michel Laplante

March 1991

Québec

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Direction régionale du Nouveau-Québec

Service de l'aménagement et de l'exploitation de la faune

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SUMMARY

The principal objective of the 1990 Report on the Situation of the Atlantic Salmon in Nunavik (Nouveau-Québec) is to present the harvesting data and to evaluate the state of the resource. In 1990, 2 348 salmon were harvested in this zone. This level is 22 % lower than 1989 and 60 % lower than the average harvest for the 1985-1989 five-year period. Of this total, subsistence, sport and commercial fishing represent 30 %, 60 % and 10 % respectively.

In 1990, subsistence fishing catches in the zone only totalled 715 salmon, which represents a 29 % drop from 1989 and a 70 % drop compared to the average for the five-year period. Although the larger harvest (82 %) comes from the Koksoak river, the diminution in subsistence catches on this river remains important (587 salmon in 1990 compared to an average of 1992 for the five-year period). In 1990, only 225 salmon were caught while commercial fishing in Ungava, all on the Koksoak river. The number of commercial fishing catches represents a 87 % drop from the five-year period. In 1990, sport fishing catches totalled 1 408 salmon, the major part (75 %) coming from the George river. Sport fishing catches of the Koksoak and Whale rivers are 198 and 141 respectively.

The low level of salmon caught on the Koksoak river reflects a diminution in the number of salmon on this river, although the poor fishing effort can be partly responsible for the diminution in the 1990 harvest. The lower abundance in salmon could mean that the reproduction requirement were not reached on this river in 1990, as it was the case in 1989. If the trends observed in the last two years continue, conservation measures will have to be discussed with users. However, the stock condition of the George and Whale rivers seems stable.

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ᐱᓪᓚᓗᐊᑭᓐᓂᖅᓴᖅ ᑐᕐᓂᓚᕆᐊᕆᓂᖅ 1990-ᒥ ᑐᓴᓐᓂᓱᐊᑎᒥ ᖃᓄᐊᓕᖅᖢᓂᕐᒧᑦᑕ ᐃᒪᓐᐱᒥᐅᑕᐃᑦ ᕿᒪᐃᑦ ᓄᓇᐃᓪᒥ (ᑯᕐᕕᐃᑦ ᑕᑦᕆᖅ) ᐱᑦᕈᑎᖃᓐᓂᖅᓴᖅ ᖁᓐᐳᑎᑦᓱᓂᒥ ᐱᖅᐅᖃᑦᑕᓂᕐᒧᑦᑕ ᖃᐅᔨᖁᑦᑕᐅᔪᓐᓇᓂᕐᓂᓂ ᐅᑦᓱᒪ ᓱᓕᑯᓂᖅᓴᖅ ᖃᐅᔨᓴᖅᑕᐅᓂᖅᓴᖅ ᑕᑦᓱᒪ ᓱᓕᑯ

RÉSUMÉ

Le bilan du Saumon atlantique au Nunavik (Nouveau-Québec) en 1990 vise principalement à présenter les données d'exploitation et évaluer l'état de la ressource. La récolte totale en 1990 dans la zone s'élève à 2 348 saumons. Ce niveau de récolte est inférieur de 22 % à celui de 1989 et de 60 % à celui de la moyenne quinquennale 1985-1989. Les pêches d'alimentation, sportive et commerciale se partagent respectivement 30 %, 60 % et 10 % de l'ensemble de la récolte de 1990.

La pêche d'alimentation dans l'Ungava s'élève uniquement à 715 saumons en 1990, ce qui représente une diminution de 29 % par rapport à 1989 et de 70 % par rapport à la moyenne de 1985 à 1989. Bien que la récolte provenant de la rivière Koksoak demeure la plus élevée (82 %), la diminution du nombre de saumons capturés pour l'alimentation sur cette rivière est importante (587 saumons en 1990 comparativement à 1992 en moyenne de 1985 à 1989). Uniquement 225 saumons ont été commercialisés en 1990 et proviennent tous de la rivière Koksoak. Ce nombre représente une diminution importante de 87 % par rapport à la moyenne observée de 1985 à 1989. La pêche sportive totalise 1 408 saumons en 1990, dont la majeure partie (75 %) provient de la rivière George. La récolte sportive provenant des rivières Koksoak et à la Baleine ont été respectivement de 198 et de 141 saumons.

Le faible nombre de captures de saumons sur la rivière Koksoak est le reflet d'une diminution dans l'abondance des saumons dans cette rivière, bien que le faible effort de pêche exercé en 1990 peut être responsable d'une partie de la diminution de la récolte. La plus petite abondance de saumons pourrait faire en sorte que les besoins pour la reproduction n'aient pas été rencontrés sur cette rivière en 1990, comme c'était le cas en 1989. Si la tendance observée ces deux dernières années se poursuit, ce qui est probable, des mesures de conservations devront être discutées avec les utilisateurs. D'autre part, la situation des stocks des rivières George et à la Baleine semble stable.

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1. INTRODUCTION

The aim of this annual report, like the previous ones, is to present the harvesting data, the state of the salmon resource and the list of researches and management works realized in the Nouveau-Québec region in 1990.

The Nouveau-Québec region only includes one anadromous Atlantic salmon production zone which gathers the Ungava bay rivers (Zone Q11). Thus, in the harvesting results, the first section presents the general situation of the zone, whereas the following sections report the harvesting and the situation for each river.

All the data on weights in this document concern uneviscerated fish. A correct factor of 1.2 is used to convert the weights given into eviscerated fish weights.

2. HARVESTING RESULTS

In 1990, approximately 2 348 anadromous Atlantic salmon were harvested in Nunavik (Nouveau-Québec). This represents a 22 % drop compared to 1989 and 60 % less than the average harvest for the 1985-1989 period (table 5). The total weight is estimated at 8 432 kg. Subsistence fishing represents 30 % of the harvest with 715 catches and 25 % of the total weight with 2 137 kg. Sport fishing accounted for 1 408 catches (60 % of harvest), for a weight of 5 237 kg (62 % of total weight). Commercial fishing only reported 225 salmon in 1990, which represents only 10 % of the harvest and 13 % of the total weight with 1 058 kg.

As mentioned hereinafter, this major diminution in the harvest is the result of a decrease in the amount of catches of the three types of fishing on the Koksoak river (mainly of the subsistence and commercial fishing) and the absence of commercial fishing on the Whale river.

According to available information, the first sea-run salmon came in estuaries during the last week of July 1990.

2.1 Subsistence fishing (table 2)

Subsistence fishing catches in the zone only totalled 715 salmon in 1990. This represents a 29 % drop compared to 1989 and 70 % lower than the average for 1985 to 1989.

The subsistence catches of the Koksoak river represent 82 % of the harvest in the zone with 587 salmon. Catches from George and Whale rivers are estimated at 30 (14 %) and 83 (12 %) respectively. We assume that the catches from the Leaf river remained the same as the previous years, which means 15 (2 %).

We can see that the number of subsistence catches has dropped on the three major rivers. However, if we consider the number of catches, the diminution in the Koksoak river harvest is, again this year, the most important, with

a 27 % drop from the 800 salmon of 1989 and a 71 % drop from the average of 1992 salmon of the 1985-1989 period. For the same periods, the Whale river reported diminutions of 36 % and 80 % and the George river 37 % and 54 %.

2.2 Sport fishing (table 1)

Outfitters were involved in almost all Atlantic salmon sport fishing in Ungava. Only 9 registered sport fishing catches were not from outfitters.

In 1990, a total of 1 408 salmon were caught in the Ungava rivers. This represents diminutions of 20 % and 22 % from 1989 and from the 1985-1989 average respectively. With 2 617 fishing days, the fishing effort dropped by 19 % and 8 % if we compare it with the same two periods. The fishing success remains the same as in 1989 with 0.54 salmon per fishing day, but is 16 % lower than the five-year average.

The major part of the sport fishing catches (75 %) are from the George river. With 1 053 registered salmon, the 1990 harvest is practically identical to the 1989 harvest (1 063 salmon) and is 13 % lower than the 1985-1989 period. With 1 797 fishing days, the fishing effort is 18 % and 10 % lower than the same two periods. The fishing success, with 0.59 salmon per fishing day, increased by 20 % over 1989 and is only 3 % lower than the five-year average.

The Koksoak river is the second largest river in terms of catches (14 %), but its 198 salmon registered in 1990 represent 58 % and 49 % drops from 1989 and the 1985-1989 period respectively. The fishing effort (369 fishing days) has decreased by 20 % from 1989, but is lightly higher (3 %) than the five-year average. The fishing success of this river has considerably dropped in 1990 (0.54 salmon per fishing day). The fishing success was 1.03 and 1.09 salmon per fishing day in 1989 and from 1985 to 1989, which represent 48 % and 50 % drops.

The number of the Whale river catches represents 10 % of the total sport fishing catches in the zone. The level of harvesting in that river was 141 salmon in 1990, whereas it was 199 and 214 in 1989 and during the five-year

period. These are 29 % and 34 % drops respectively. The fishing effort also decreased by 35 % and 21 % in relation to the same two periods (395 fishing days). The fishing success (0.36 salmon per fishing day) slighty increased by 9 % over 1989 and remains 16 % lower than the 1985-1989 period.

Finally, 9 salmon were caught in the new outfitter establishments of the Leaf river and 7 others were caught along the Ungava bay coast, which represents about 1 % of the total harvesting.

Therefore, in Ungava, the proportion of sport fishing salmon from the George river is higher in 1990, whereas the Koksoak river contribution to the total harvest decreased and the Whale river harvest is practically identical.

2.3 Commercial fishing (table 2)

In 1990, only 225 salmon were commercialise in Ungava and they all come from the Koksoak river. This is the second consecutive year that the commercial fishing harvest is this low. The number of catches represents a 8 % drop from 1989 and a 87 % drop from the five-year period. Quotas in numbers were 2 500 and 500 respectively for Koksoak and Whale rivers. The low number of catches is also imputable this year to the low results of the fishery and also to a diminution in the fishing effort on the Koksoak river, and to the absence of fishing effort on the Whale river. More details on commercial fishing activities are given in table 4.

The average weight of the salmon caught while commercial fishing on the Koksoak river is 4.7 kg (n = 255) in 1990. This is 8 % lower than the average weight of 1989 (5.12 kg) and 7 % lower than the average weight of 1987 and 1988 (5.08 kg). The high average weight observed again this year shows that the salmon caught while commercial fishing are mainly mixed growth or multiple sea-winter salmon.

2.4 Illegal, accidental and other types of fishing

No illegal fishing has been reported in the zone in 1990.

2.5 The Koksoak river case

Once again this year, there was no additional follow-up to control the level of harvesting during the fishing season. However, because of the low performance of the fishery, this situation did not have any effect on the total quota of the subsistence and commercial fishing.

2.6 Genitor count and stock condition

There is no systematic count of genitors in the Ungava rivers and no assessment of the stock condition has been done in 1990.

The Koksoak river

The major part of the fishing effort and of the sport fishing harvest is made in the Delay river area. In this area, the catches consist mainly in mixed and sea growth Atlantic salmon, which arrived in the Koksoak river the year before they were caught, and estuarian growth salmon. The 1990 harvest and fishing success dropped by half if we compare to 1989 and the five-year period. This major diminution is a sign showing a decrease in the number of salmon in this area, which can be linked to the poor return of the sea-run salmon reported in 1989 (Roy and Laplante 1990). The degree of association (Kendall coefficient of concordance; Siegel 1956) between the fishing success in the estuary and the sport fishing success on the Delay river the following year shows that there is a very significative link ($P < 0.01$) between the two fishing successes (success 1983-1989 estuary, success 1984-1990 Delay river). However, the 1990 success (0.54 salmon per fishing day) remains higher than the 1982-1985 period (0.31, 0.49, 0.43 and 0.45 salmon per fishing day respectively).

In 1990, the number of subsistence and commercial fishing catches in the estuary is 812. This number is lower than last year's level (1 025 salmon), which was the lowest number of subsistence and commercial fishing catches since 1977.

The proportion of the different types of salmon obtained from the 1990 biological monitoring sample lead us to reject this sample to describe the catch (Tom Boivin, personal communication[1]). Under these circumstances, we kept the proportions from the identification of the principal types of salmon (grilse, multiple sea-winter salmon, estuarian) compiled by fishermen and mentioned in their fishing booklets, despite the inaccuracy of this method; fish identification is based only on external characteristics. Therefore, the proportion of the said three groups are 20 %, 38 % and 33 % respectively, if we exclude the black salmon. The preponderance of the marine salmon over the estuarian salmon corresponds to the pattern observed on this river, with the exception of 1989, when estuarian salmon were the predominant catch (table 7).

In 1990, the total fishing effort was lower than what is usually done on the Koksoak river (table 6). On the other hand, the distribution of the effort before and after the arrival of the sea-run salmon corresponds to the usual proportions observed on this river, contrary to what was reported for 1989 when the major part of the fishing effort was done before the arrival of the sea-run salmon. In 1990, the fishing success is 1.08 salmon per net-day, which is 48 % higher than the 0.78 salmon per net-day observed in 1989. If we exclude the 1989 number, the 1990 fishing success remains lower than the 1982-1988 evaluations.

Thus, the low 1990 harvest seems related in part to the diminution in the fishing effort. However, even if the fishing success would have stayed at the same level for a fishing effort equal to the 1982-1988 average (1 684 fishing days), the harvest would only have been of 1 819 salmon. Furthermore, according to observers of the river fishing activities, the diminution in the fishing effort is also associated to the poor success. To this

1. Makivik Corporation.

respect, the fishermen compensation modalities could have also been an incitement to the reduction of the fishing effort. Whatever the importance and the real part of each of these factors, the available indications show that the abundance in salmon in 1990 in this area of the river was lower than the 1979-1988 levels. However, this abundance seems higher than in 1988. At this point, we cannot link this situation to a diminution of a particular type of salmon. Finally, this lower abundance in salmon could mean that the eggs deposition in 1990 be lower than the number required for an optimal production of the river.

We recommend to maintain the actual fishing plan on this river and to carefully follow the situation in 1991. If the trends observed in the last two years continue, conservation measures will have to be discussed with users.

The George river

There was an important diminution in the number of subsistence fishing catches in 1990, but the fishing effort for this type of fishing is unknown.

The sport fishing success (0.59 salmon per fishing day) is 20 % higher than 1989 success and only 1 % lower than the 1985-1989 period. If we compare the 1990 success to the average for 1979-1983, the fishing success is 23 % higher in 1990. Based on these figures, we can say that this year's abundance is comparable to the numbers of the previous years, and maybe slightly higher than the first half of the 1980s. Furthermore, considering that the level of catches (1 136 salmon) is slightly lower than the average number of catches since 1979, the number of eggs laid down in 1990 should be comparable to the number of the previous years.

The few information available for this river show that there is no ground to believe that there will be downward or upward trends for years to come.

The Whale river

No commercial fishing was done on this river in 1990.

In 1990, the sport fishing level of catches has dropped considerably (minus 29 % in relation to 1989 and minus 34 % in relation to 1985-1989), in part as the result of a diminution in the fishing effort. It has dropped by 16 % compared to 1985-1989 and remains the same as in 1989. The fact that there was a change in the sport fishing pattern on the river complicates the interpretation of these figures.

If we take only the "Whale River Ltd" outfitting operations, which have been stable during the last decade, we can see that there has been a 28 % diminution in the fishing success in relation to 1989 and 1985-1989 (1990 = 0.34; 1989 = 0.47; 1985-1989 = 0.47). If we compare it to the average for 1984 to 1989 ($\bar{x}$ = 0.44; s = 0.08; min = 0.29; max = 0.53), the 1990 success is 23 % lower than the average. The levels of catch and release seems to have stayed constant during the past years.

The diminution in the sport fishing success leads to suppose that the number of salmon in the river was lower in 1990. The major outfitter mention that, according to him, there was less salmon this year. However, the fishing success is only slightly inferior to the lower limit of the standard deviation. Therefore, it is difficult to say to what extent the information available show a real important drop in the number of salmon.

Under these circumstances, the evaluation of the stock condition must be made carefully. Without anticipating an inevitable downward trend of the number of salmon, it is a fact that the possibility is real. However, an increase in the return would be an optimistic view of the situation for the near future.

3. INSTALLATION, RESEARCH AND SPECIAL PROGRAMS

The works realized in 1990 on the Atlantic salmon are related to the follow-up of harvesting and monitoring of catches (table 3).

4. RETURN FORECASTS

Potential returns for 1991 cannot be assessed precisely. However, as we mentioned last year, if the apparent poor abundance of the number of salmon on the Koksoak river is the result of a high exploitation during the 1980s, it is very possible that the situation will repeat itself in the next years. The relative stability observed on the George river should mean that the returns will remain the same in 1991. Furthermore, for this river, the strong proportion of grilse in the 1990 sport fishing catches is a sign of a good potential return of the multiple sea-year salmon in 1991. It would be surprising if the Whale river returns be higher in 1991, though any prediction for this river remains uncertain.

ACKNOWLEDGMENTS

The realisation of this report was made possible with the cooperation and participation of many people. First of all, we want to thank all users : the Inuit population of Kuujjuaq and Kangiqsualujjuaq, sport fishermen, commercial fishermen and Nouveau-Québec salmon outfitters. We would like to mention the effort made by all the people who carried out and participated in the gathering and compilation of data, particularly Messrs Tom Boivin and Alix Gordon of Kuujjuaq Research Centre of the Makivik Corporation, Messrs Marcel Bernard, Mark Kooktook, Louis Bazin and Mrs. Danièle Rémillard of the Service de l'aménagement et de l'exploitation de la faune, and Mr. Vallée Saunders of the Service de la conservation de la faune, of the Direction régionale du Nouveau-Québec.

We also wish to thank Kuujjuamiut Inc. who kindly authorized the use of the fishing activities follow-up results 1990 of the Inuit of Kuujjuaq. Finally, we wish to thank Mr. Tom Boivin of the Makivik Corporation for his very useful comments and precisions on the analysis of the Koksoak river situation.

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TABLE 1. Results of sport fishing, 1985-1990

ZONE Q11 : UNGAVA		CATCHES			FISHING DAYS			FISHING SUCCESS			WEIGHT (kg)	
River		Average 85-89	1989	1990	Average 85-89	1989	1990	Average 85-89	1989	1990	Average	Total
KOKSOAK	Grisle	289	361	147								
	msw[1]	102	116	51	359	461	369	1,09	1,03	0,54		
	Total	391	477	198							2,70	535
WHALE	Grisle	131	134	75								
	msw	83	65	66	499	608	395	0,43	0,33	0,36		
	Total	214	199	141							3,70	522
GEORGE	Grisle	558	574	561								
	msw	653	489	492	1 988	2 180	1 797	0,61	0,49	0,59		
	Total	1 211	1 063	1 053							3,93	4 137
LEAF	Grisle	---	---	4								
	msw	---	---	5	---	---	24	---	---	0,38		
	Total	---	---	9							3,00	27
OTHERS RIVERS[2]	Grisle	---	12	5								
	msw	---	8	2	---	---	32	---	---	0,22		
	Total	---	20	7							2,31	16
TOTAL	Grisle	978	1 081	792								
ZONE Q11	msw	838	678	616	2 846	3 249	2 617	0,64	0,54	0,54		
	Total	1 816	1 759	1 408							3,72	5 237

1) msw = Multiple sea-winter
2) Ungava bay

(91-03-20)

TABLE 2. Results of harvesting, subsistence and commercial fishing 1985-1990

ZONE Q11 : UNGAVA		COMMERCIAL FISHING			SUBSISTENCE FISHING			MORTALITIES			REMARKS
River		Average 85-89	1989	1990	Average 85-89	1989	1990	Average 85-89	1989	1990	
KOKSOAK	Grisle msw[1]										
	Total	1 401	225	225	1 992	800	587	---	0	0	
WHALE	Grisle msw										
	Total	336	20	0	150	47	30	---	0	0	
GEORGE	Grisle msw										
	Total	0	0	0	182	131	83	---	0	0	
LEAF	Grisle msw										
	Total	0	0	0	15	15	15[2]	---	0	0	
OTHERS RIVERS	Grisle msw										
	Total	0	0	0	19	7	0	---	0	0	
TOTAL ZONE Q11	Grisle msw										
	Total	1 737	245	225	2 358	1 000	715	---	0	0	

1) msw = Multiple sea-winter
2) Estimation

(91-03-20)

TABLE 3. Research and follow-up of harvesting in 1990

ZONE Q11 : UNGAVA		
RIVER		
George	1 :	Follow-up of subsistence fishing (in cooperation with the Makivik Corporation)
	2 :	Follow-up of sport fishing and monitoring of catches
Whale	1 :	Follow-up of commercial and subsistence fishing (Makivik Corporation)
	2 :	Follow-up of sport fishing and monitoring of catches
Koksoak	1 :	Follow-up of commercial fishing
	2 :	Follow-up of fishing activities (subsistence and commercial) and monitoring of catches (Makivik Corporation)
	3 :	Follow-up of sport fishing and monitoring of catches

(91-03-25)

TABLE 4. Detailed report on commercial Atlantic salmon harvesting in Ungava - 1990

NAME OF COMMERCIAL FISHERY	KOKSOAK RIVER				WHALE RIVER			
	QUOTA	CATCHES			QUOTA	CATCHES		
	Number of salmon	Number of salmon	Average weight (kg)	Total weight (kg)	Number of salmon	Number of salmon	Average weight (kg)	Total weight (kg)
Gordon, Watt and Koneak Inc.								
. (Watt)	0	---	---	---	475	0	---	---
. (Gordon)	1 096	49	5,49	269	0	---	---	---
. (Koneak)	460	0	---	---	0	---	---	---
Kuujjuaq Cooperative	84	0	---	---	0	---	---	---
Nayumivik Corporation	860	176	4,48	789	25	0	---	---
TOTAL	2 500	225	4,70	1 058	500	0	---	---

(91-03-20)

TABLE 5. Summary of Atlantic salmon catches in Nunavik - 1990

TYPE OF FISHING	RIVER																	
	KOKSOAK			WHALE			GEORGE			LEAF			OTHERS			TOTAL		
	Number of fish	Average weight (kg)	Total weight (kg)	Number of fish	Average weight (kg)	Total weight (kg)	Number of fish	Average weight (kg)	Total weight (kg)	Number of fish	Average weight (kg)	Total weight (kg)	Number of fish	Average weight (kg)	Total weight (kg)	Number of fish	Average weight (kg)	Total weight (kg)
Subsistence (%)	587 (25,0)	2,82	1 655 (19,6)	30 (1,3)	3,70*	111 (1,3)	83 (3,5)	3,93*	326 (3,9)	15 (0,6)	3,00*	45 (0,5)	0 (0,0)	--	0 (0,0)	715 (30,5)	2,99	2 137 (25,3)
Sport (%)	198 (8,4)	2,70	535 (6,3)	141 (6,0)	3,70	522 (6,2)	1 053 (44,8)	3,93	4 137 (49,1)	9 (0,4)	3,00	27 (0,3)	7 (0,3)	2,31	16 (0,2)	1 408 (60,0)	3,72	5 237 (62,1)
Commercial (%)	225 (9,6)	4,70	1 058 (12,5)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	225 (9,6)	4,70	1 058 (12,5)
Mortalities (%)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)	0 (0,0)	--	0 (0,0)
TOTAL (%)	1 010 (43,0)	3,22	3 248 (38,5)	171 (7,3)	3,70	633 (7,5)	1 136 (48,4)	3,93	4 463 (52,9)	24 (1,0)	3,00	72 (0,9)	7 (0,3)	2,29	16 (0,2)	2 348 (100,0)	3,59	8 432 (100,0)

* Average weight of salmon caught while sport fishing

(91-03-20)

TABLE 6. Statistics of Atlantic salmon catches on the Koksoak river Inuit fishery

YEAR	ESTIMATED FISHING EFFORT (NET-DAY)			ESTIMATED CATCHES		FISHING SUCCESS (SALMON/NET-DAY)	
	Pre-sea-run salmon period (%)	Sea-run salmon period (%)	Total	Estuarian salmon (%)	Total	Estuarian salmon (%)	Total catches
1982	1 004 (49)	1 044 (51)	2 048	385 (11,6)	3 316	0,38	1,62
1983	1 033 (45)	1 263 (55)	2 296	347 (9,0)	3 854	0,36	1,68
1984	934 (44)	1 189 (56)	2 123	1 445 (37,0)	3 906	1,55	1,84
1985	475 (33)	964 (67)	1 439	995 (36,3)	2 750	2,09	1,91
1986	378 (33)	767 (67)	1 145	1 889 (35,7)	5 290	5,00	4,62
1987	524 (33)	1 064 (67)	1 588	700 (15,1)	4 634	1,34	2,92
1988	746 (52)	689 (48)	1 435	868 (26,5)	3 266	1,16	2,28
1989	909 (65)	491 (35)	1 400	476 (46,4)	1 025	0,52	0,73
1990	250 (33)	500 (67)	750	195 (24,0)	812	0,78	1,08

Source : Makivik Corporation - A synthesis report of the Koksoak fishery
- Tom Boivin, Personal communication

TABLE 7. Proportion of the different types of Atlantic salmon in monitoring samples on the Koksoak river Inuit fishery

YEAR	SAMPLES[1]	GRILSE	MULTIPLE SEA-YEAR SALMON	MIXED GROWTH	ESTUARIAN GROWTH	PREVIOUSLY-SPAWNED	OTHERS	BLACK SALMON
1979	432	22,9	46,1	12,0	16,2	2,6	0,3	(5,4)
1980	1 235/934	24,9	27,5	11,1	35,8	0,0	0,0	(24,4)
1981	547/411	23,8	33,3	14,6	25,5	2,2	0,5	(19,6)
1982	356/307	27,0	51,1	9,8	6,5	2,3	2,2	(8,4)
1983	373/301	32,2	60,5	4,3	1,0	1,7	0,3	(8,3)
1984	375/258	12,4	59,3	1,2	26,4	0,4	0,4	(10,1)
1985	311/205	15,1	52,2	15,1	16,6	0,7	0,3	(7,1)
1986	412/364	21,2	28,6	7,1	48,1	0,8	0,6	(12,0)
1987	139/104	28,9	37,2	9,6	20,2	1,9	6,7	(25,2)
1988	192/183	26,2	43,7	2,2	27,9	0,0	0,0	(4,7)
1989	136/ 91	5,5	14,3	3,3	69,2	1,1	6,6	(33,1)

Adaptation of Boivin and al. 1990.

1) The percentages of black salmon are calculated from all the samples (left column); the others percentages are based on the samples minus the black salmon.

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